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ABSTRACT

To explore the relationships among three sets of variables--social status, communication, and energy conserving behavior--405 respondents from a highly educated, upper income, largely white collar community and 333 respondents from a predominantly lower-middle and working class city were interviewed over the telephone. Questions were designed to determine subjects' (1) issue salience, or how significant they considered energy conservation; (2) energy knowledge; (3) attitudes toward energy conservation; (4) thermostat setting; and (5) conservation efforts. Responses were correlated with three independent variables: media exposure, use of public affairs content, and interpersonal and mass communication on energy conservation. Results revealed that in both cities, most sources of energy information were used relatively equally across status levels; associations among salience, knowledge, attitudes, and overt behavior were relatively weak; and interpersonal and mass communication were found to have moderate effects on energy conservation. The communities differed widely; however, in several significant relationships among variables. Higher status respondents were more likely to adopt energy conserving behavior in the upper income sample, for example, than in the lower middle income community. (Extensive tables of data are included.) (MM)

COMMUNICATION AND ENERGY CONSERVATION: SOCIAL STATUS IN A TALE OF TWO CITIES

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Communication and Energy Conservation:

Social Status in a Tale of Two Cities

A decade has passed since the Arab oil embargo forced Americans into the realization that our standard of living and perhaps our form of government were endangered unless energy availability and consumption could be brought under control. In the interim, government program and research priorities in energy have stressed technological solutions and largely ignored social research perspectives on energy use despite the large energy savings that could result from changes in consumer energy behavior.[1]

A large and growing volume of social research nonetheless has been generated by the energy crisis. A recent accounting of consumer energy conservation research turned up more than 600 studies since the 1973 embargo.[2] Most studies, however, tend to be atheoretical and intuitive, many are simply descriptive of attitudes and opinions, and usually merely assume a predictive relationship between attitudes and actual energy conservation behavior.[3] The trend in more recent studies, however, is toward more conceptual modeling and experiments.[4]

There is little evidence for or against any relationship between media use and energy conservation behavior. Little systematic research has been done into the effects of the widespread energy information campaigns mounted by utilities, government agencies, and interest groups.[5] The studies that have been done have met with mixed results. One study, using direct mail procedures, showed no effect on electricity use of varying source credibility. The study is, unfortunately, open to serious questions about its design. Another study using inserts in the monthly bill, was able to influence the number of requests for energy conservation information and to reduce electric consumption among heavy energy users by manipulating the source of the message. Repetition of the message had no effect, however.[6] Effects on conservation have been found with prompts and exhortations to save energy aimed toward individuals under specific circumstances, and especially

with rapid informational feedback to individual consumers on the amount of energy they are using or saving.[7]

Lacking direct evidence for mass media effects on energy conservation, it is tempting to fall back on theory and research findings developed over 40 years of empirical examination of political communication during election campaigns. Most of what we know about the effects of news media content stems from this extensive body of research. Much less attention has been devoted to other types of content and effects. The long standing limited-effects model of political communication has in recent years given way to perspectives suggesting stronger and more diverse types of media impact.[8] Efforts to increase and understand public energy conservation, and to understand communication processes, would be greatly enhanced if these perspectives could be extended beyond political campaigns.

There are reasons why it may be hazardous simply to extrapolate from political communication research, however. A comparison of literature on political participation with that of energy conservation illustrates this point. There is considerable evidence of strong positive associations of the various components of political participation: interest, knowledge, attitudes of trust, and overt behavior such as campaigning and voting on election day.[9] A causal model of awareness to knowledge to attitude formation to overt behavior seems compatible with these results.

Although less evidence has been gathered regarding the relationship of these variables to one another in the arena of energy conservation, it is likely that these components are much less closely connected. Attitudes toward energy problems are not reliably related to conservation behaviors.[10] Neither do the perceived importance of energy as an issue nor knowledge about energy seem to predict conservation behavior.[11] This does not mean that attitudes and salience of issues are unimportant, since they may increase support for public conservation policies and efforts. Correlations among the other pairs of components are not reported, but

their connections appear to be less certain than is the case for political participation. No simple causal model is suggested.

Another potentially important difference between political participation and energy conservation lies in the nature of overt behavior appropriate to each. Voting on election day or wearing a campaign button, while not of great benefit to the individual directly, costs the person little in money or time. Insulating a house or changing the type of heating, on the other hand, involves considerable cost. Behaviors such as lowering the thermostat setting, wearing warmer clothes to compensate, and turning off unused lights must be constantly repeated. In addition, the benefits of energy conservation are not immediately apparent. Energy use often has immediate personal benefits but its costs are usually delayed and its long-term negative consequences (e.g., pollution, resource depletion) shared with society as a whole.[12] Thus the context of energy use behavior is somewhat different from political and many other human behaviors social scientists investigate, since energy use is usually a by-product of activities performed in pursuit of other goals.[13] Furthermore, decisions to use or conserve energy, unlike decisions to produce it, are made in a decentralized way by millions of people making a myriad of choices,[14] which may account for the government's preference for a "technological fix." It also underscores the need for investigating the potential role of communication in informing and perhaps co-ordinating members of society in regard to energy behavior.[15]

Social status seems an important starting point in an investigation of energy use and communication. The burden of energy conservation may fall more heavily on the poor and less educated, a pattern which may further differentiate energy use from political behavior since, in the latter case, non-behavior has no direct penalty for the individual. In addition, expenditures for heating as a proportion of the budget are greater for the lower income groups.[16] As Tienda and Aborampah (1981) note, the ability of low income families to absorb fuel price

increases depends on a "collective household strategy to allocate scarce resources against potentially competing demands."

The research literature is not entirely consistent with respect to social status differences in energy conservation. A number of studies have shown positive relationships between status and beliefs about the seriousness of the energy crisis,[17] but others have shown that the consumption of energy is also related to status.[18] At least one study has noted a negative relationship between status and various attitudes supportive of conservation, but most show that higher status individuals have positive conservation sentiments.[19] While most studies have used simple correlation coefficients that mask nonlinear relationships, some studies have found a curvilinear relationship with the medium status groups being the most strongly supportive of energy conservation.[20]

The complex relationships of social status to energy conservation suggest that we extend the "effects gap" research to this area.[21] If the poor do pay more for energy, then it should be doubly important to find out if the media more effectively reach the upper status audience members. The disparity in media effects may be manifested in two different ways: The lower status groups may be less exposed to energy information and advocacy and, over the above differential access, they may be less likely to integrate the content they do use and to translate it into conservation behavior.

Analysis of the status effects-gap issues presumes that media use is related to the various components of energy conservation, but evidence, as we have noted, is scarce on this point. Because media use has been shown to have some effect in political communication and other areas, it is reasonable to posit some effects particularly in the most easily changed areas such as salience and knowledge. It is also plausible that media use would have some relationship to energy conservation behavior and that status differences may affect this relationship. Thus, we framed the following research questions:

1. To what extent are there discrepancies between social status levels in what the public thinks, knows and does about the conservation of energy?

2. Are there similar status discrepancies in mass media and interpersonal communication behavior relevant to the use of energy information?

3. How closely interconnected are the various components of energy conservation: cognitions, knowledge, attitudes and overt behavior?

4. Does mass media use play a substantial role in affecting the public's reactions to energy conservation? If so, what medium and type of content are most important?

5. What are the consequences for social status inequalities of the role the mass media play with respect to energy conservation? Is mass media impact less among those of lower status?

Research Design

Two research sites were used in order to provide sufficient variation in social status and, of course, to provide validation benefits across communities. The site we label Madison actually includes as one-third of its sample people living in Middleton a city of 12,000 contiguous to Madison, Wisconsin. Madison is a city of 171,000, the locale of state government and the university. Little difference in demographic characteristics was found between the Madison and Middleton segments. Together they represent a highly educated upper income overwhelmingly white-collar sample. Random digit dialing procedures were used to select the sample drawn proportionate to the number of private lines at a given exchange. In order to study comparable energy consuming behavior, we have restricted our analysis here to the 405 respondents living in single family dwelling units in Madison and Middleton. The exclusion of apartment dwellers had the additional effect of reducing the number of students who were in our overall sample.

The second research site was West Allis, a predominately lower-middle and working class city of 64,000 contiguous to the city of Milwaukee. Historically, it is a suburb to which the more mobile ethnic groups moved in their escape from the south side of Milwaukee. Not only is it considerably lower in social status

than Madison, but its population is older and residents tend to live in older houses. Although the sampling procedures were comparable to those we used in Madison, we decided to analyze the two samples separately rather than merging the samples. We made this decision for two reasons. First, the questionnaires were the same or similar in many key questions, but not identical throughout. The differences came principally in the framing of some of the energy attitude questions. Second and more importantly, we felt that social status is not simply an individual characteristic but is also a variable relevant to the community. That is, an upper status person living in a lower status community is not the same as one residing in an upper status community. Living in an upper status community will affect the lower status person in ways different from lower status community influences. The meaning of social status thus may vary according to where the person lives. Separation of the two samples is further suggested by the realization that the two sites represent very different mass media situations and are served by separate utility companies.

After screening for single family dwelling units, our West Allis analysis was based on 333 respondents later divided into social status levels. Telephone interviews were conducted at both research sites in October of 1981. Interviewers were graduate and advanced undergraduates trained as part of research methods courses. Interviews were verified and actual energy consumptions data not analyzed here were obtained for a sub-sample of our respondents. At the time of the interview, our respondents were between two severe winters and were additionally concerned with sharply rising energy costs.

Measurement: Control Variables

Our measurement of social status was the sum of standardized scores of education (number of years of schooling completed) and income (total 1980 household income from all sources). An alternative would have been to use the Marxist

categories of occupation, ownership and workplace situation, but previous research found these to be far less efficient predictors of energy conservation.[22] Because we wanted to compare results for status levels across samples, we decided to use identical social status cutting points in each sample. Previous findings of curvilinear relationships between social status and energy conservation led us to use three rather than two categories of social status.[23] Because we wanted to compare results for status levels across samples, we decided to use identical social status cutting points in each sample. These decisions resulted in two relatively small cells, 50 high status in West Allis and 87 low status in Madison. Social status differences between communities are reflected in the 42% high status in Madison compared to only 15% in West Allis and in the 21% low status in Madison contrasted to the 45% in West Allis.

Based on previous research findings,[24] three control variables were used: Age of respondent, age of the dwelling unit, and the number of inhabitants (hereafter referred to as "family size"). The means in Madison were 43.7 for age, 25.3 for age of dwelling unit, and 3.1 for family size. For West Allis, they were 53.0 for age, 37.2 for dwelling unit, and 3.0 for family.

Measurement: Dependent Variables

Five components of energy conservation were examined: issue salience, knowledge, attitudes, low thermostat setting and total energy conservation behaviors.

Energy salience was based on responses to the question: "We'd like to know how you feel about some specific issues. For each of the following, could you tell us whether you think they are very important, important, somewhat important, or not at all important?" The more important the issue of "energy" was seen as an issue, the higher the energy salience.

Energy knowledge was evaluated by the number of correct responses to six questions (correct answers are underlined):

1. Which nation produces the most oil annually: The U.S., Saudi Arabia, Iran or the Soviet Union?

2. At current rates, within 20 years so much of the nation's natural gas will be used up that there won't be enough to heat the homes now using gas heat. True or false?

3. By 1990, the average cost of fuel in Wisconsin is expected to remain the same, increase by 50%, double or triple?

4. Does Wisconsin's climate make it a good place for solar heating? Yes or no?

5. How much of Wisconsin's electric energy comes from nuclear power? Less than 1%, about 10%, about 35%, or about 75%.

6. Is this statement true or false: If crude oil were not available, there would be no way to manufacture many of our present plastics, synthetic fibers, chemical and other products?

Item 4. was not included in the West Allis index.

Energy attitudes[25] for the Madison sample was measured by summing the "pro-conservation" ratings on five-point Likert scales on four questions:

1. It is everyone's responsibility to conserve energy -- the little things add up.

2. People who can afford it should be able to buy as much energy as they want. (reverse scored)

3. Under no circumstances should we relax our environmental standards in order to increase energy production.

4. Why should I save energy? It just provides more energy for someone else to waste. (reverse scored)

A somewhat different set of items was used in West Allis. Items 3 and 4 were not included and three items were added:

1. In my daily life, there is more to be gained than lost by cutting down on the use of energy.

2. I know science will find an answer before energy problems get too bad. (reverse scored)

3. To me, it's worth the extra expense to keep the thermostat above 65 degrees. (reverse scored)

Low thermostat setting[26] was a sum of three items weighted according to the proportion of the 24 hour cycle they represented:

1. At what temperature is your thermostat usually set in the winter during the day? (degrees multiplied by .50)

2. How about in winter during the evening? (degrees multiplied by .17)

3. How about in winter while you sleep? (degrees multiplied by .33)

Total energy conservation behaviors[27] were assessed by counting the number of behaviors mentioned in response to the following question: You have probably heard about things people can do to save energy in their homes. Not everyone can or wants to do these things. Can you recall anything you have done in the past five years to save energy in the home and about when it was done or when you begain using it?

Measurement: Independent Variables

Three types of communication variables were used as independent variables: media exposure, use of public affairs content, and energy related mass media and interpersonal communication behaviors.

Media exposure was scored separately as newspaper and television variables each indexed by the sum of standardized responses to two questions:

1. About how many days a week do you read a newspaper? Would you say you read a paper every day, nearly every day, a few days a week, less than a few days a week, or never? (Newspaper: time spent)

2. On days that you read the newspaper, about how much time do you spend reading it? (Newspaper: time spent)

3. How many evenings during the week do you watch television? Would you say every day, nearly every day, a few days a week, less than a few days a week or never? (Television: time spent)

4. On those evenings that you do watch television, about how many hours do you usually watch after 5 p.m.? (Television: time spent)

Public affairs content was measured as three variables: newspaper public affairs, television public affairs, and newspaper editorial reading. These were indexed by responses to the following questions:

1. When you read your paper and come across the following kinds of stories how often do you read them? Would you say frequently, sometimes, rarely or never read?
   a. stories about local and state government and politics (newspaper: public affairs use)
   b. stories about national government and politics (newspaper: public affairs use)
   c. editorials (newspaper: reading of editorials)

2. About how often do you watch the following kinds of television programs? Do you watch frequently, sometimes, rarely or never?
   a. national news (television: public affairs use)
   b. local and state news (television: public affairs use)

Energy communication was evaluated with five variables. Newspaper energy story reading was created by summing responses to two questions:

1. If you come across a newspaper story on new ways to save energy in the home, how likely would you be to read the article? Would you say very likely, likely, somewhat likely, or not at all likely?

2. If you do read that article on new ways to save energy in the home, how much attention would you pay to the content of the article? Would you pay close attention, some attention, a little attention or no attention at all?

Television energy program viewing was measured similarly to these two questions except that the phrasing was "a television program about new ways to save energy in the home."

Television energy commercials was obtained from the following question: "Have you seen any commercials recently about energy conservation practices?"

Read utility pamphlets and brochures was taken from: "How often do you read the brochures and pamphlets that come with your gas and electric bill? Would you say you read them frequently, sometimes, rarely or never?"

The final measure, energy discussion with others was from "How often, if ever, do you talk to people about energy usage in the home? Would you say frequently, sometimes, rarely or never?"

Research Hypotheses

Although there is neither a compelling theory nor a rich body of previous research to guide our expectations, for clarity we can set out some provisional hypotheses relevant to our research questions.

Because of greater interest in public issues among the more educated, given that energy conservation has become an important issue in the past decade, we predicted:

H1A. There will be positive relationships between social status and the various components of energy conservation.

We assumed further that status discrepancies will be manifested most clearly in those areas most constrained by requiring effort or financial capabilities. We assume that salience is the least constrained component, with the behavioral measures at the other extreme. Although testing is not direct, we predicted:

H1B. The relationships of social status and energy conservation will be weakest for energy salience, strongest for thermostat setting and other energy behaviors, with those for attitude and knowledge intermediate in strength.

We assumed that high status people have more outside activities and therefore tend to budget their media use more closely than do lower status persons. We therefore expected both negative and positive relationships between social status and the various types of communication behaviors. Given previous research evidence and our reasoning about the time constraints on high social status, we predicted:

H2A. There will be negative relationships between social status and time spent with newspapers and with television.

As reasoned above, the assumption that high status persons will be more interested in energy conservation when combined with the assumption of their time budgeting, leads to the following hypotheses:

H2B. There will be positive relationships between social status and use of public affairs material in newspapers and on television.

H2C. There will be positive relationships between social status and attention to energy conservation content in newspapers and on television, to energy commercials, to utility company pamphlets, and to interpersonal communication about energy.

As discussed in the literature review, we anticipated rather weak connections among the various components of energy conservation. Within the matrix of components, however, we can generate some hypotheses based on the traditional causal chain taken from other areas of communication research, that implies a salience to knowledge to

attitude to behavior sequence. Salience and overt behavior, being most distant in the chain, should have the least connection with contiguous variables having the strongest association; thus:

H3A. The relationships between energy conservation components will be weakest between salience and the two types of overt behavior and strongest between: salience and knowledge; knowledge and attitude; and attitudes and overt behavior.

One possible benefit of education is a learned ability to integrate one's thinking, feeling and behavior. To the extent that this holds for higher status persons, we should expect greater bonding or connectedness between components of energy conservation among these respondents; thus:

H3B. There will be stronger intercorrelations among the components of energy conservation among high status than among lower status respondents.

We assume that the public affairs content of media and specific energy content contain pro-conservation messages. If we further assume that the audience attends to such messages, we can predict:

H4A. There will be a positive relationship between use of public affairs content and the components of energy conservation.

H4B. There will be a positive relationship between attention to specific energy communication and energy conservation.

No relationship of either measure of time spent to energy conservation was predicted because the explicit pro-conservation messages may be more than offset by the implicit anti-conservation messages of general media content, particularly that of entertainment television.

Media effects may be expected to be greatest for criteria least constrained by other factors. As assumed above, salience is conceived of as least constrained among energy components while overt behavior is seen as the most constrained; thus:

H4C. The positive relationships between media use (public affairs and energy content) and energy conservation will be strongest for salience and weakest for the two measures of overt behavior.

Because of greater interest in public affairs and higher bonding of energy conservation components among the higher status respondents, we can make a final "effects-gap" prediction:

> H4D. The positive relationship between media use (public affairs and energy content) and energy conservation components will be strongest for the high status group and weakest for the low status group.

Statistical Analyses

Statistical analyses were conducted within the two samples, Madison and West Allis. One-way ANOVAs were used to test differences among the three status levels on the various dependent, control and independent variables. Significance levels and averaging of zero-order correlation coefficients were used to examine hypotheses about the relationships among energy conservation components.

Hierarchical regression analyses were used to test relationships of communication variables and energy conservation. Three control variables--respondent's age, age of dwelling unit and family size--were introduced as a first block of variables. Then each of the three types of communication variables were alternatively introduced and their effects tested in terms of their ability to predict the post-control residual variance. To assess the role of individual communication variables, F-tests were used on the third-order partials resulting after the introduction of the three control variables but before any communication variables were entered into the equation.

RESULTS

Status and Energy Conservation

Our first research question required the examination of status level differences in energy conservation components (Table 1). Overall, five of the ten comparisons in Table 1 are statistically significant. Three of the remaining five nonsignificant comparisons are in the predicted order (high status highest, low status lowest). One of the five significant patterns, however, reveals a curvilinear relationship. Low status West Allis respondents do keep their thermostats

higher (low conservation) than do those of middle status, but the high status people keep their thermostats higher than any other group in either sample. In general, there is support for our first research hypothesis (H1A).

Some support is also shown for our second hypothesis (H1B) that the status differences will be weakest for energy salience and strongest for the two behavior measures. Salience is not systematically related to status, but energy attitudes show a similar lack of association. Both behavior measures show strong relationships in each sample, although the previously mentioned anomalous cell appears in West Allis among the high status group.

---Table 1 about here---

Status and Communication Behavior

Social status shows statistically significant differences on all three control variables in both samples (Table 2). Higher status respondents are younger, live in newer homes, and have larger families (in part because lower status respondents were older and their children probably no longer live with them). The strength of the differences reinforces the importance of these control variables in later analyses.

The predicted negative relationship of status to newspaper and television exposure time (H2A) was obtained in three of four comparisons. Newspapers exposure is inconsistent showing no relationship in West Allis and a curvilinear one in Madison.

Only partial support is shown in Table 2 for the prediction (H2B) that high status respondents use more public affairs content. A consistent pattern is shown for newspaper public affairs but is significant in only one sample. The results for both television public affairs viewing and editorial reading are inconsistent.

---Table 2 about here---

Perhaps of greater importance is the finding of little association between social status and our five measures of energy communication. Only one of ten

comparisons is statistically significant, that for the viewing of energy commercials in Madison. Contrary to prediction (H2C), exposure to specific energy content shows no clear pattern of status discrepancy. There appears to be no clear "effects-gap" in terms of utilization of energy content.

Energy Component Relationships

The zero-order correlation coefficients among the five components of energy conservation shown in Figure 1 appear to meet our expectation that they would be relatively low. Although 11 of the 20 are statistically significant, their average of +.11 seems much lower than comparable coefficients we might have obtained through the same types of measures for political participation.[28]

---Figure 1 about here---

Our prediction that the salience to overt behavior relationships would be low (H3A) is upheld with an average of +.09 across four coefficients in the two samples. But this average is substantially less than that of only two other pairs of variables, conservation attitudes to thermostat setting (+.20) and to other energy behaviors (+.16). Our prediction of higher coefficients for contiguous variables doesn't hold very well (+.14 for eight comparisons). This is due largely to a lack of association between salience and knowledge.

The breakdowns of energy component relationships by status level are shown in Figures 2 and 3. Our prediction (H3B) of strongest coefficients among the high status respondents and weakest among those of low status was not confirmed. In Madison the groups are nearly equal: high +.12, medium +.12, low +.09). West Allis shows a slight reversal with +.03 for high status and +.10 for the other two. The low average coefficient for high status in West Allis is a function of three negative relationships with other energy conservation behaviors (salience -.23, knowledge -.19 and thermostat setting -.13). This may reflect the instability of the small cell size of 50 in that group.

Communication Effects: Salience, Knowledge and Attitudes

We predicted that public affairs media use would be positively related to the components of energy conservation (H4A). Results for the first three energy conservation components are shown for the total samples in the last column in Table 3. In Madison, the three public affairs variables account for significant increments in all three dependent variables, although the proportions are not large (3.2%, 2.1%, 3.0%). In West Allis, however, these three variables add significant increments only to salience (4.4%) and not to either knowledge or attitudes.

---Table 3 about here---

Specific energy conservation communication was also predicted to relate positively to the components of energy conservation (H4B). The results in Table 3 give only limited support to that hypothesis in Madison where the five energy communication variables account for 6.7% of the variance in salience but do not contribute significant increments for knowledge or conservation attitude. The situation is brighter in West Allis where the five variables account for 15.3% for salience and 5.9% for knowledge. The increment for attitude is not significant.

No prediction was made for the two exposure time variables. Yet in two instances, significant relationships are shown. In Madison, they are related to conservative attitudes (1.5%) and in West Allis to salience (4.0%).

Because our hypotheses specify that the relationships should be positive and not simply that they represent significant proportions of variance accounted for, we must examine the direction of the relationships. These are shown in the last column for each city in Table 4. For the public affairs variables, eight out of the 18 partial coefficients are statistically significant. In all eight instances, the sign of the relationship is positive. All three variables have some significant relationships, although the viewing of television news contributes somewhat less than do the reading of hard news and editorials in the newspaper. One final difference worth noting is the tendency for reading hard news to be related to high

energy salience but not to contribute to having positive conservative attitudes, while editorial reading contributes more evenly to salience, knowledge and attitudes.

---Table 4 about here---

Direction of relationship is also of concern for the five energy communication variables. Twelve of the 30 partial coefficients in Table 4 are statistically significant. Of the 12, only one is in a negative direction where in Madison the reading of utility company inserts and pamphlets is associated with lower salience of energy. Unlike the situation for public affairs media use, the significant coefficients seem concentrated around salience, with only two instances of significance each for knowledge and attitudes.

Communication Effects: Overt Behavior

The degree to which communication variables account for variance in our two measures of energy conservation behavior is shown in Table 5. For Madison, this fits our hypothesis that both public affairs media use and specific energy communication would be related to overt behavior (H4A and H4B). In the total sample in Madison, the proportion of the incremental variance attributable to public affairs use is small (1.8%, 2.2%) but statistically significant. Somewhat larger proportions are shown for the energy communication variables (4.9%, 5.1%). Neither public affairs use nor energy communication is related to overt behavior in West Allis, however. Exposure time fails to predict overt behavior in either city.

---Table 5 about here---

Results for the predicted positive direction of the partial coefficients is shown in Table 6. Three of the 12 public affairs media coefficients for the total samples are statistically significant and all are in the positive direction. In Madison, reading hard news in the newspaper is associated with both forms of behavior (+.14, +.10) and editorial reading is related to the total overt behaviors (+.13).

---Table 6 about here---

For the five energy communication variables, seven of the 20 coefficients in Table 6 are statistically significant. Five of the seven are in the predicted positive direction. As was the case for salience, the reading of utility company material in Madison is negatively related to overt behavior. That is, those most likely to read the utility pamphlets tend to keep their thermostats high and to have done less to save energy in other ways.

A comparison of the findings in Tables 5 and 6 with those of Tables 3 and 4 provide only partial support for our hypothesis that the relationships predicted would be strongest for salience and weakest for overt behavior (H4C). Overall, the relationships are stronger for salience than for any other component but those for overt behavior are not any weaker than those found for energy knowledge and for conservation attitudes.

Status and Communication Effects

Earlier we examined how social status groups differed on our dependent and independent variables. There was only scattered evidence that lower status persons made less use of public affairs and energy content. Tables 3 to 6 give evidence for a different aspect of the "effects gap"--the strength of the effect per unit of exposure as expressed in proportions of various accounted for and by partial correlation coefficients within status levels. Because the cities differ in so many characteristics and the "media richness" can be said to be far greater in West Allis (the Milwaukee media market) than in Madison, it appears appropriate to analyze the results separately for each city.

For Madison, comparisons of the variance in salience accounted for by the three types of communication variables shows some clear evidence of nonequivalence. The three types of communication variables account for an average of 7.3% of salience variance in the high status group, compared with 3.7% medium, and only 3.0% for low (Table 3). The corresponding average partial coefficients are: +.13 high, +.07 medium and -.08 (Table 4).

No clear pattern is shown for the prediction of knowledge in Madison, with the high communication variables accounting for an average of only 2.0% per type for high status compared with 3.8% for both medium and low status. The partials average near zero for all three status groups with the negative coefficients offsetting the positive ones.

Madison shows a more interesting pattern for conservation attitudes where a reverse "gap" is shown in terms of variance accounted for: an average per communication variable type of 8.2% for low status, 6.4% for medium and only 3.4% for high status. The partials in Table 4 show a marked difference between status levels that changes the interpretation. While the significant coefficients (television public affairs and newspaper editorials for high status and newspaper editorials, newspaper energy stories and energy discussion for medium status) are all positive, the largest coefficients for low status (television time and newspaper editorials) are both negative. Most of the strong media effects on energy attitudes among the low status respondents, then, is against a conservation position. Reading of editorials plays a role for attitudes in all three groups, but it is a different one for low status than for the other levels.

The communication variables also show a reverse "gap" for thermostat control in Table 5. The three types of variables account for an average of 9.5% of the variance among the low status respondents, contrasted to only 3.5% for medium and 2.5% for high status. The partials indicate, however, that this strong impact within the low status group has either a positive or negative direction depending upon which communication variable we consider. Spending time with the newspaper, reading its public affairs content and energy stories are all associated with lower thermostat settings, while reading of utility company pamphlets is tied to higher non-conserving temperatures.

Analyses of other types of energy conserving behavior in Madison reveal a non-significant reversal for H4D in that a larger average proportion of variance is

accounted for in low status (4.6%) than in medium (3.1%) or high (3.4%) status. The partial coefficients for low status show significant contribution for both newspaper time (+.20) and newspaper public affairs (+.20), similar to their results for thermostat setting. The other two groups show significant coefficients only for energy discussions (both +.25) with the reading of utility pamphlets having a negative relationship (-.18) in the medium status group.

Overall, the Madison data show support for the "effects gap" hypothesis (H4D) for salience only. Sizeable reversals are shown for conservation attitudes and thermostat settings, although these contrary trends are mitigated by the presence of negative partial coefficients in the low status group.

West Allis. Analyses of variance in salience accounted for by the three types of communication variables in West Allis (Table 3) reveals a clear curvilinear relationship. Strong prediction of salience is found in the high status group (averaging 13.6%) as predicted (H4D) but results are even stronger for those of low status (16.4%) and weaker for medium status (8.1%). The partial coefficients in Table 4 clarify these differences. The low status group's coefficients are uniformly positive, averaging +.25 contrasted to medium (+.12) and high (+.07) status which have several nonsignificant negative predictors.

Energy knowledge results are also curvilinear but in a pattern opposite to that shown for salience. Here the middle status group shows the strongest prediction (9.2%) with lesser averages for high (6.7%) and low (3.9%) status. Partial coefficients illustrate this pattern more sharply averaging +.18 for medium status contrasted to -.08 high status and +.08 for low status.

Conservation attitudes show the first evidence of an "effects gap" in our analyses of the predictive power of communication variables. The three types of communication variables account for an average of 19.5% for high status compared with only 4.0% in medium status and 5.0% in low status. Inspection of the partial coefficients for attitudes, however, reveals that although use of energy

stories in newspapers and on television are strongly related to pro-conservation attitudes among those of high status, the reading of public affairs content and marginally the recall of energy commercials are associated with anti-conservation attitudes.

Thermostat setting reveals a modest tendency toward stronger media influences in the high status group in West Allis, although as we have seen none of the three types of communication variables is significant overall. The average proportions of variance accounted for across the three types are: 6.5% high, 3.1% medium, and 2.3% low (Table 5). The partial coefficients even out this difference, however. The only significant coefficient for high status is negative--heavy television viewers have warmer homes (Table 6). Each of the other two status groups have one significant positive relationship. Low thermostat settings are found among those recalling energy commercials for middle status and among the editorial readers for low status.

Total energy conserving behaviors show something of a reverse "energy gap" trend in that a greater proportion of variance is accounted for in the low status group (averaging 7.3%) than in the medium (4.1%) and low (4.6%) groups. The partial coefficients back this up in that three significant relationships are shown for low status: newspaper time (+.20, recall of energy commercials (+.23) and reading of utility pamphlets (+.26). Only one significant coefficient is found in the other two groups. Utility company pamphlet reading is linked to conservation behaviors among those of medium status (+.25).

The West Allis data, then, show little uniformity across the five energy conservation components. Where the strongest effects are shown for high status (conservation attitudes and thermostat setting), these effects tend to be balanced between positive and negative influences. Reverse "effects gap" evidence is found for two other components, salience and other conserving behaviors, and the fifth

component, energy knowledge, demonstrates curvilinearity with the medium status group having the strongest relationships.

Conclusions

We have attempted to answer five research questions about the relationships among three sets of variables: social status, communication, and energy conserving behavior.

First, we have provided mixed evidence relevant to the question of status inequality in energy conservation components. Clear and consistent support for the presence of such a gap was found in the more frequent adoption of more energy conserving behaviors, which includes high cost-effect measures, among those of higher status. Here the greater economic power of the more affluent persons may have combined with their somewhat greater knowledge to produce a status differential. The specifically habit-related form of overt behavior, keeping the thermostat low, revealed status differences in Madison but a sharply curvilinear function in West Allis. Why the high status citizens of West Allis keep their home more than four degrees warmer than their counterparts in Madison is not entirely clear. It may reflect general high consumption cultural patterns of those who have recently achieved status living in an ethnic lower middle class community. Energy knowledge also showed the predicted status "gap" in Madison and a nonsignificant pattern in West Allis. But no status differentials were found for either energy salience or conservation attitudes. Apparently concerns over energy have reached all status levels and there is relative equality in their pro-conservation attitudes.

The second question asked if there were also status inequalities in the use of sources of energy information. Here we found less evidence for a source "access gap" than might have been expected. Only the reading of public affairs content in the newspaper and the attention paid to energy commercials showed the predicted pattern. All other sources of energy information were used relatively equally across status levels. This is a rather hopeful sign from the vantage points of

both protecting the interests of the less affluent and in disseminating energy information more generally.

Our third research question concerned the connectedness of the various components of energy conservation. We found the anticipated weak associations between salience, knowledge, attitudes and overt behavior. The only statistically significant relationships consistent across the two cities were between pro-conservation energy attitudes and the two forms of overt behavior. The lack of connectedness for energy components may be contrasted to areas such as political participation with greater bonding among components. The greater cost and effort implied in the total energy conserving behaviors could account for this difference. So may the interpretation of energy salience as a public issue by our respondents. Some highly knowledgeable or energy conserving people may have seen energy as a private rather than public issue. Also, had we measured support for public policy, or knowledge of household energy-saving measures, some other patterns may have been revealed. At any rate, the simple awareness to knowledge gain to attitude change to behavior change model does not seem to apply to energy conservation using these measures. Does this mean that policy should be directed solely to changing overt behavior without concern for salience, knowledge or attitude change? We think not because these other components may be relevant to other aspects of the large picture of energy policy. Support for pro-conservation legislation, for example, may depend upon public concern and support independent of overt behavior to save energy in one's own home.

The role of communication in affecting energy conservation was our fourth research question. The answer was affirmative overall, although the magnitude of the relationships tended to be moderate. Of the variance in energy conservation components accounted for by communication variables in the two samples, 13 of the 30 increments (43%) were statistically significant. For the partial coefficients, 31 of 100 (31%) reached significant levels. The strength of effect varied across

components. It appears that communication is quite influential in conveying the importance of energy as a public issue. Its impact on the remaining components is rather even. Given the infrequency of energy related content in the news media and of the multiple factors affecting energy conserving behaviors, it is surprising that communication demonstrates statistically identifiable effects on overt behavior. The effect of communication was greater the more specifically energy related the variable was. Heavy use of newspapers and television had little connection to energy conservation while reading of energy stories and discussion of this topic had considerable impact. Energy commercials were an exception to this rule, however, in that they had little effect on any component. Differences were also shown between media. Television news and specific energy viewing had effects mainly confined to high ratings of energy as an issue whereas newspape influence was distributed across the components. Perhaps the fleeting images o evision solely affect attention while the complications of energy content require presentation in printed form. One form of print use, the reading of utility bill inserts, illustrated the power of print for either positive or negative effects. In West Allis, reading these pamphlets was related to high levels of salience, knowledge and total --including high-cost--energy behaviors. Opposite effects were shown in Madison, however, where pamphlet reading was associated with low salience ratings and non-conserving behaviors of both types. Various interpretations of the negative findings are possible. Guilt-ridden non-conserving citizens may be seeking information or, alternatively, the utility company in Madison may be disseminating latent messages that the energy crisis is not a public issue and is somehow being handled by the private sector.

The final research question was the extent of status inequality in the effects of communication on energy conservation. Here we found an "impact gap" only for salience. Reverse gaps were found for two different other components in each city.

Overall, the evidence for the media contributing to status inequality in energy conservation is weak for both access and impact "gaps." Only one effective communication variable, reading of public affairs content in the newspaper, and one energy component, salience, show substantial inequalities.

The results of this study have illustrated the appropriateness of our subtitle: A Tale of Two Cities. Across the various tables and figures, we have encountered numerous instances of significant relationships in one sample but not in the other and several cases of reversals in pattern. For example, we found status differences in knowledge in Madison but not in West Allis. In Madison, there was an association between knowledge and attitudes but none between salience and attitudes; the reverse pattern held in West Allis. The high status groups in each city seemed particularly different in their patterns. Some of these differences can be attributed to small sample sizes. Discrepancies involving conservation attitudes may be due to the fact that a rather different set of items was used in each city. The lack of clear findings for knowledge in both cities may reflect weaknesses in measurement. We used factual items that were important in terms of national policy but may have been far removed from the specific concerns of our respondents. In future research, more function items should be developed that reflect the experiences and needs of consumers. Another source of different results between samples may be the structural and cultural forces operating beyond individual characteristics in each community. Finally, the media and utility companies provided very different content that may have differential impacts.

Beyond any differences between samples, however, we have identified communication influences on energy conservation that are different from those of political communication. There is reason, therefore, to resist generalizing from political studies to other areas. Energy conservation like other social issues requires research specific to its dynamics. The importance of energy policy on the future of the nation make such research all the more necessary.

Footnotes

1 See Glenn Shippee, "Energy Consumption and Conservation Psychology: A Review and Conceptual Analysis," Environmental Management, 4(4):297-314 (1980). Daniel Yergin, "Conservation: the Key Energy Source," Chapter 6 in Robert Stobaugh and Daniel Yergin, eds., Energy Future: Report of the Energy Project at the Harvard Business School (New York: Random House, 1979), states that "if the United States were to make a serious commitment to conservation, it might well consume 30 to 40 percent less energy than it now does, and still enjoy the same or an even higher standard of living. That saving would not hinge on a major technological breakthrough, and it would require only modest adjustment in the way people live." Lawrence J. Becker and Clive Seligman, "Welcome to the Energy Crisis," Journal of Social Issues, 27(2):1-7 (1981), report that "eliminating energy waste in home heating, alone, would save the equivalent of 1.6 million barrels of oil a day. That is about three times as much energy as the United States imported from Iran before their revolution, and about half the total amount of recent imports from the entire Middle East. The technology is now available to eliminate this waste, and eliminate it in a cost effective manner." An early agenda for social energy research was prescribed by Hans H. Landsberg, John J. Schanz, Jr., Sam H. Schurr and Grant P. Thompson, Energy and the Social Sciences (Washington, D.C.: Resources for the Future, Inc. 1974).

2 Gordon H.G. McDougall, John D. Claxton, J.R. Brent Ritchie, and C. Dennis Anderson, "Consumer Energy Research: A Review," Journal of Consumer Research, 8:343-354 (1981).

3 See McDougall et al., op. cit.; Paul C. Stern and Gerald T. Gardner, "Psychological Research and Energy Policy," American Psychologist 38(4):329-342 (1981); Glenn Shippee, op. cit.; Barbara C. Farhar, Patricia Weis, Charles T. Unseld and Barbara A. Burns, Public Opinion About Energy: A Literature Review (Washington, D.C.: National Technical Information Service, 1979). McDougall et al., report that about 26% of the studies are opinion research, 18% concern restrictions or economic incentives and disincentives, 14% involve information-related experiments and initiatives, 14% involve explanatory consumption modeling, 14% are reports of self-reported conservation behavior, 2% are adoption/diffusion studies, and the balance are overview and discussion papers.

4 McDougall et al., op. cit.

5 Lou McClelland and Rachelle J. Canter, "Psychological Research on Energy Conservation: Context, Approaches, Methods," Chapter 1 in Andrew Baum and Jerome E. Singer, eds., Energy: Psychological Perspectives--Advances in Environmental Psychology, Vol. III (Hillsdale, N.J.: Erlbaum, 1981). The authors note that research is impeded by the large scope of these information campaigns and the lack of control researchers have over their implementation. In addition, information on saving energy is confounded with other variables (e.g., feedback or incentives) in many of the designs. Informational material on the long-term effects of dwindling energy supplies has not been evaluated, but the authors suggest that, based on social learning theory, this information is unlikely to have much effect due to the remoteness of the consequences to the individual. Also see P.C. Stern and E.M. Kilpatrick, "Energy Behavior," Environment 19:10-15 (1977).

6 The null effect study is: Thomas A. Heberlein, "Conservation Information: The Energy Crisis and Electricity Consumption in an Apartment Complex," Energy Systems and Policy, 1:105-117 (1975). The study successfully conveying information is: C. Samuel Craig and John M. McCann, "Assessing Communication Effects on Energy Conservation," Journal of Consumer Research, 5:82-88 (1978). Other studies

are relevant to communication influences as well. Julie Honnold and Lynn D. Nelson, "Voluntary Rationing of Scarce Resources: Some Implications of an Experimental Study," presented to the American Sociological Association, New York (1976), found that persons with higher levels of energy consumption tended not to expose themselves to information on resource scarcity. David J. Barnaby and Richard Reizenstein, "Profiling the Energy Consumer: A Discriminant Analysis Approach," presented to the Orsa/Tims conference, Chicago (1975), reported that persons willing to reduce home heating used more mass media and interpersonal sources of information than others. Eric Hirst, Richard Goltz and Janet Carney, "Residential Energy Use and Conservation Actions: Analysis of Disaggregate Household Data" (Oak Ridge National Laboratory, Oak Ridge, Tenn., 1981), found that a conservation "hot line" had little effect on energy conservation behavior. McClelland and Canter, op. cit., note that low credibility of utilities and government among energy consumers may be a factor in the impact of these campaigns. Also see Jeffrey Milstein, "Attitudes, Knowledge and Behavior of American Consumers Regarding Energy Conservation With Some Implications for Governmental Action" (Washington, D.C.: Federal Energy Administration, 1976). Paul Stern and Gerald Gardner, "A Review and Critique of Energy Research in Psychology," Social Science Energy Review 3:1 (1980), suggest that the limited data on the effects of "how-to" information indicate that the information alone seems to have no effect on conservation activity, although the information in combination with a program to make the practice more available or easier to adopt may increase its effectiveness.

7 See especially Shippee, op. cit., Stern and Gardner (1981), op. cit. Also see Paul D. Luyben, "Prompting Thermostat Setting Behavior: Public Response to a Presidential Appeal for Conservation," Environment and Behavior, 14(1):113-128 (1982).

8 The tradition of the limited effects model is based on: Bernard Berelson, Paul F. Lazarsfeld and William N. McPhee, Voting (Chicago: U. of Chicago Press, 1954) and Paul F. Lazarsfeld, Bernard Berelson and Hazel Gaudet, The People's Choice (New York: Columbia U. Press, 1944). It is stated in its most extreme form in: Joseph Klapper, The Effects of Mass Communication (New York: Free Press, 1960). Upward estimates in the extent and variety of media effects have been expressed by: Lee B. Becker, Maxwell E. McCombs and Jack M. McLeod, "The Development of Political Cognitions," In Steven H. Chaffee, ed., Political Communication (Beverly Hills, Calif.: Sage, 1975); Jay G. Blumler and Jack M. McLeod, "Communication and Voter Turnout in Britain," in T. Legatt, ed., Sociological Theory and Survey Research (Beverly Hills, Calif.: Sage, 1974); and Steven Chaffee and Sun Yuel Choe, "Time of Decision and Media Use in Britain," Public Opinion Quarterly, 44:53-69 (1980). One author even raises the question of whether we are returning to the concept of "powerful mass media": Elisabeth Noelle-Neumann, "The Spiral of Silence: A Theory of Public Opinion," Journal of Communication 24(2):43-51 (1974).

9 Lester W. Milbrath, Political Participation: How and Why People Get Involved in Politics (Chicago: Rand McNally, 1965); Lester W. Milbrath and M.L. Goel, Political Participation (Chicago: Rand McNally, 1977); Sidney Verba and Norman H. Nie, Participation in America: Political Democracy and Social Equality (New York: Harper & Row, 1972).

10 Lawrence J. Becker, Clive Seligman, Russell H. Fazio, and John McConnon Darley, "Relating Attitudes to Residential Energy Use," Environment and Behavior, 13(5):590-609 (1981); J.S. Black, Attitudinal, Normative, and Economic Factors in Early Response to an Energy-Use Field Experiment, unpublished doctoral dissertation, Department of Sociology, University of Wisconsin-Madison (1978); Stuart W.

Cook and Joy L. Berrenberg, "Approaches to Encouraging Conservation Behavior: A Review and Conceptual Framework," Journal of Social Issues, 37(2):73-107 (1981); R. Curtin, "Consumer Adaption to Energy Shortages," Journal of Energy and Development, 1:12-21 (1976); David Gottlieb, "Texans' Responses to President Carter's Energy Proposals," in Seymour Warkov, ed., Energy Policy in the United States: Social and Behavioral Dimensions (New York: Praeger, 1978); Louise A. Heslop, Lori Moran and Amy Cousineau, "'Consciousness' in Energy Conservation Behavior: An Exploratory Study," Journal of Consumer Research, 8:299-305 (1981); Marvin E. Olson, "Consumers' Attitudes Toward Energy Conservation," Journal of Social Issues, 37(2):108-131 (1981); J.R. Brent Ritchie, Gordon, H.G. McDougall and John D. Claxton, "Complexities of Household Energy Consumption and Conservation," Journal of Consumer Research, 8:233-242 (1981); C.M. Seligman, J.M. Darley, R.H. Fazio, L.J. Becker and J.B. Pryor, "Predicting Summer Energy Consumption from Homeowners Attitudes," Journal of Applied Social Psychology, 9:70-90 (1979); Shippee, op. cit.; Stern and Gardner (1981), op. cit.; Nancy E. Wascoe, Effects of Noxiousness and Implied Personal Responsibility Associated with an Energy Crisis upon Attitudes, Behavioral Intentions, and Behavior Regarding Energy Conservation, unpublished dissertation, University of Colorado, Boulder (1978). Seligman et al., op. cit., did find actual (not self-reported) energy consumption levels for air conditioning related to health and comfort attitudes. Becker et al., op. cit., found that comfort attitudes were related to winter gas consumption. Wascoe, op. cit., found in an experiment a relationship between variation in the content of a persuasive message and changes in both attitudes and energy conservation behavior.

11 Ritchie et al., op. cit. One source that does report a relationship between perceived salience of the energy problem and lower daytime thermostats is: James R. Murray, Michael J. Minor, Norman M. Bradburn, Robert F. Cotterman, Martin Frankel and Alan E. Pisarski, "Evolution of Public Response to the Energy Crisis," Science, 184:257-263 (1974).

12 J. Platt, "Social Traps," American Psychologist 28:641-651 (1973); McClelland and Canter, op. cit. Also see A. Bandura, The Principles of Behavior Modification (New York: Holt, Rinehart and Winston, 1969).

13 McClelland and Canter, op. cit.

14 Robert Stobaugh and Daniel Yergin, "The End of Easy Oil," Chapter 1 in R. Stobaugh and D. Yergin, eds., op. cit.

15 Donald Warren and David Clifford, "Local Neighborhood Social Structure and Response to the Energy Crisis of 1973-74" (Ann Arbor: University of Michigan Program in Community Effectiveness, 1975), found differences in reliance on mass media and interpersonal sources of information about the energy crisis, and differences in the correspondence between attitudes and energy conservation behavior, based on variation in configuration of the neighborhood social setting.

16 Dorothy Newman and Dawn Day, The American Energy Consumer (Cambridge, Mass.: Ballinger, 1975); Marta Tienda and Dsei-Mensah Aborampah, "Energy-Related Adaptations in Low-Income Nonmetropolitan Wisconsin Counties," Journal of Consumer Research, 8:265-270 (1981).

17 William H. Cunningham and Sally Cook Lopreato, Energy Use and Conservation Incentives: A Study of the Southwestern United States (New York: Praeger,

1977); Farhar et al., op. cit.; Marvin E. Olsen and J. Goodnight, "Public Acceptance of Energy Conservation," in Seymour Warkov, ed., op. cit.; O.S. Scheffler, S.I. Schwartz and T.J. Tardiff, "Energy Conservation Attitudes and Behavior in Small Cities: Davis and Woodland, California," Environmental Quality Series, Number 31 (Davis, Calif.: Institute of Governmental Affairs and Institute of Ecology, 1979).

18 P.A. Beck, "Factors in Household Conservation: The Implications for Energy Policy," presented to the American Political Science Association, 1979; Newman and Day, op. cit.

19 The negative relationship finding is: Julie A. Honnold and Lynn D. Nelson, "Support for Resource Conservation: A Prediction Model," Social Problems, 27(2): 220-234 (1979). Positive findings are contained in: Cunningham and Lopreato, op. cit.; Olsen, op. cit.; Olsen and Goodnight, op. cit.

20 Cunningham and Lopreato, op. cit.; Farhar et al., op. cit.

21 The original formulation is: Phillip J. Tichenor, George A. Donohue and Clarice N. Olien, "Mass Media Flow and the Differential Growth in Knowledge," Public Opinion Quarterly, 34:159-170 (1970). See also: George A. Donohue, Phillip J. Tichenor and Clarice N. Olien, "Mass Media and the Knowledge Gap: A Hypothesis Reconsidered," Communication Research, 2:3-23 (1975); James S. Ettema and F. Gerald Kline, "Deficits, Differences and Ceilings: Contingent Conditions for Understanding the Knowledge Gap," Communication Research, 4:179-202 (1977); Yuko Miyo, "Knowledge-Gap Hypothesis and Media Dependency: Is Television a Knowledge Leveler?" presented to the International Communication Association, Dallas (1983). The present study uses the terminology of: Jack M. McLeod, Carl R. Bybee and Jean A. Durall, "Equivalence of Informed Political Participation: The 1976 Presidential Debates as a Source of Influence," Communication Research, 6:463-487 (1979).

22 Robert M. O'Brien and Sheldon Kamieniecki, "An Exploratory Study of Social Class and Energy Issues," Political Behavior, 2:371-384 (1980).

23 Cunningham and Lopreato, op. cit.; Farhar et al., op. cit.

24 Ritchie et al., op. cit.

25 A treatment of attitudes toward resource scarcity as a public issue can be found in Keith R. Stamm and James B. Grunig, "Communication Situations and Cognitive Strategies for the Resolution of Environmental Issues," Journalism Quarterly, 54 (1977); Keith R. Stamm, "Two Orientations to the Conservation Concept of Scarcity," Journal of Environmental Education, 2(summer):134-139 (1970).

26 Low thermostat setting, of course, is relative to the distribution in the community, not necessarily relative, as measured, to any previous thermostat setting in a given household. Respondents who report lowering their thermostats do have lower thermostat settings than those who do not report taking that measure to save energy in the home (West Allis data).

27 The literature indicate that consumers could take two distinct approaches to energy conservation in the home, each requiring different behavior support contexts and reinforcements. Based on D. Hayes (Energy: The Case for Conservation, Paper Number 4, Washington, D.C.: Worldwatch Institute, 1976), Stern and Gardner (1981), op. cit., distinguish between "curtailment" activities--decreased use of energy and making do with less--and "efficiency" measures--adoption of efficient technology to garner more benefit from the same energy outlay, or perhaps

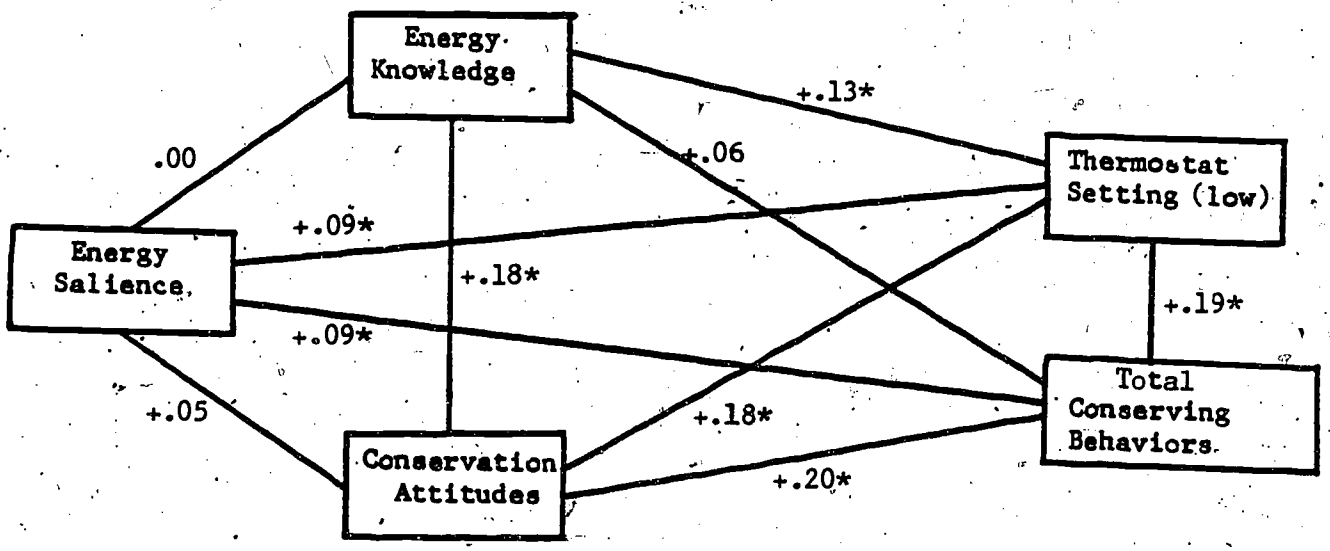
the same benefit from less energy. McClelland and Canter, op. cit., similarly distinguish between "energy conserving behaviors" and "balance modifiers." The latter, the authors say, "facilitate savings by modifying the balance between energy use and its benefits." The former includes actions such as lowering the thermostat setting, turning off lights, taking shorter showers, and so forth, and effectively reduces both energy use and its benefits. These former activities must be repeated frequently and require adaptation, although they are low cost economically. The latter includes actions such as insulating the house or purchasing more efficient furnaces, which are relatively permanent, but require money or time. Similar distinctions in types of behavior are drawn for citizen crime prevention activities by Garrett J. O'Keefe, Harold Mendelsohn, Kathaleen Reid-Nash, Beth Rosenzweig, and Elise henry, Citizen Reactions to the "Take a Bite Out of Crime" Campaign After Two Years: A Panel Survey Evaluation (Denver, Colo.: University of Denver Center for Mass Communications Research and Policy, 1982). A preliminary analysis of reported conservation activities among the West Allis respondents found empirically a distinction between two primary factors of behaviors directly reflecting these behavior differences.

28 Intercorrelations of comparable political measures for samples from similar populations in Madison reveal average coefficients between +.20 and +.30.

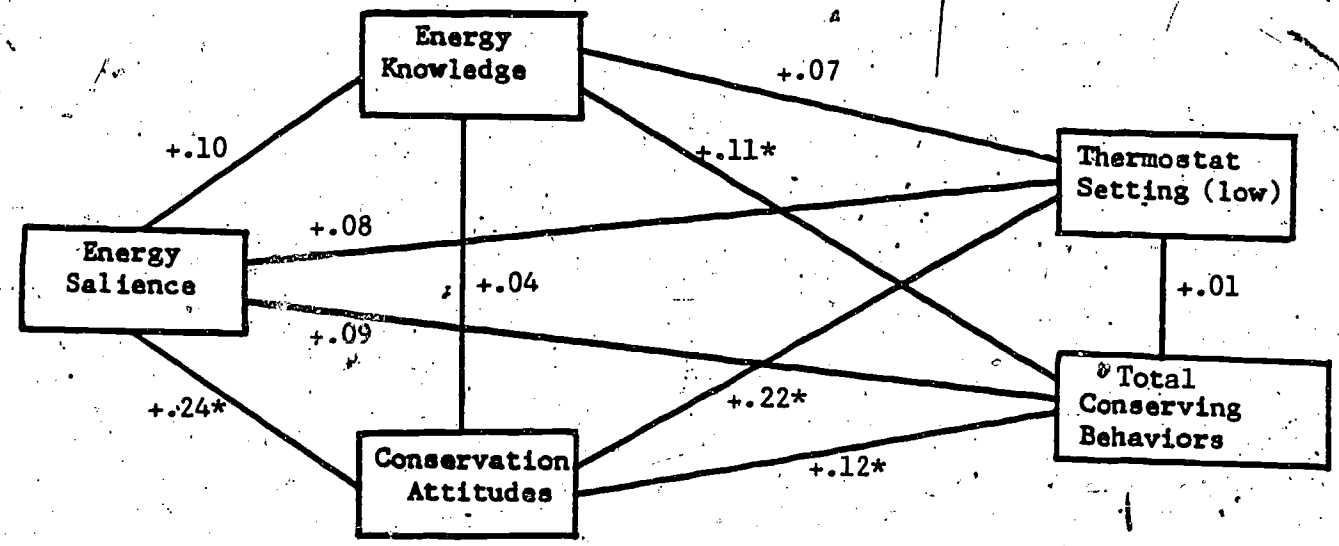
FIGURE 1

Zero-order Correlations Among Dependent Variables

Madison (N = 405)



West Allis (N = 333)



* = significant at .05 or less

FIGURE 2

Zero-order Correlations Among Dependent Variables Within Social Status Levels

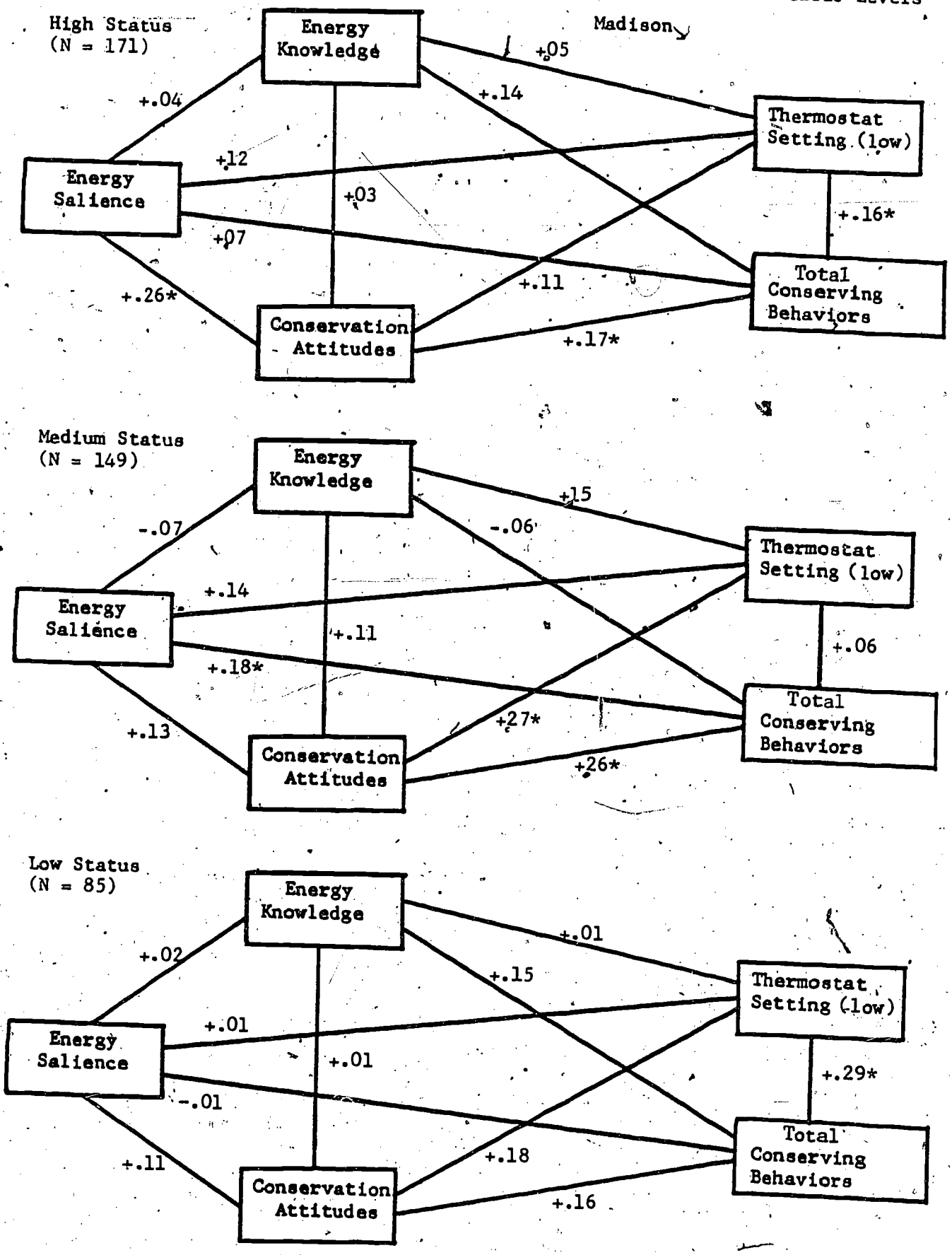


FIGURE 3

Zero-Order Correlations Among Dependent Variables Within Social Status Levels

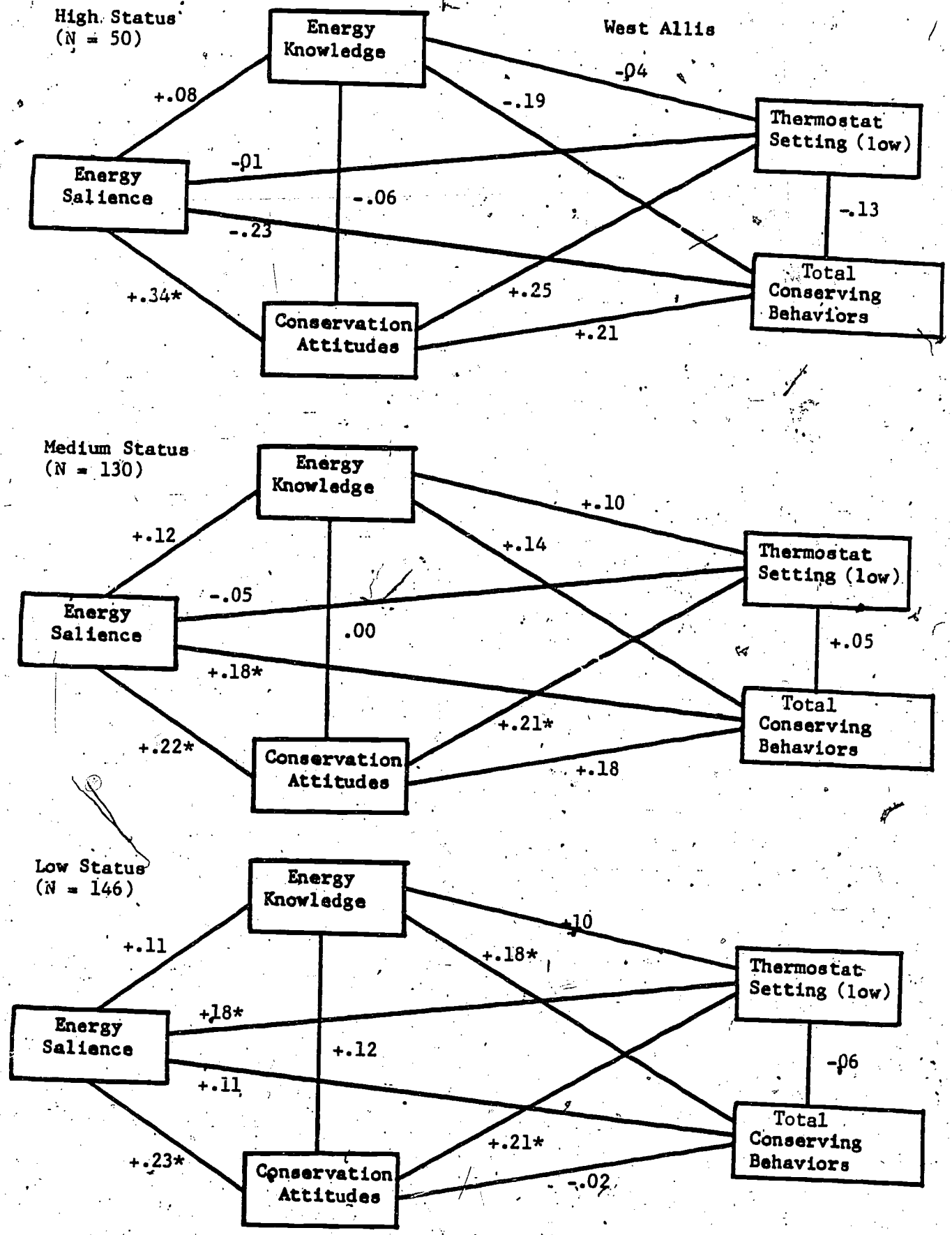


TABLE 1

Social Status Standard Scores for Dependent Variables: Energy Salience, Knowledge, Attitudes and Behavior

Dependent Variable	City	Social Status: High	Medium	Low	F=
Energy Salience	Madison	-.013	-.051	+.117	< 1
	W.Allis	+.155	+.060	-.107	1.66
Energy Knowledge	Madison	+.179	-.023	-.319	7.33*
	W.Allis	+.114	+.021	-.057	< 1
Energy Conservation Attitudes	Madison	+.015	+.061	-.137	< 1
	W.Allis	+.146	+.005	-.059	< 1
Lowering Thermostat Temperature	Madison	+.136	+.096	-.443	10.88*
	W.Allis	-.281	+.244	-.120	7.13*
Total Energy Conserving Behaviors	Madison	+.204	-.074	-.280	7.52*
	W.Allis	+.350	-.016	-.106	3.97*
N =	Madison	(171)	(149)	(85)	
	W.Allis	(50)	(130)	(146)	

* = significant at .05 or less

TABLE 2

Social Status Standard Scores for Control and Independent Variables: Demographic, Media Exposure, Public Affairs Media Use, and Energy Communication

Variable	City	Social Status: High	Medium	Low	F=
Control					
Age of Respondent	Madison	-.175	-.115	+.550	17.77*
	W.Allis	-.277	-.222	+.300	11.85*
Age of Dwelling Unit	Madison	-.178	-.032	+.414	10.56*
	W.Allis	-.460	-.104	+.250	10.94*
Family Size	Madison	+.031	+.120	-.275	4.40*
	W.Allis	+.284	+.034	-.142	3.36*
Independent					
Media Exposure					
Newspaper: Time Spent Reading	Madison	-.041	-.107	+.285	4.12*
	W.Allis	-.025	+.029	-.006	< 1
Television: Time Spent Viewing	Madison	-.052	-.078	+.245	3.14*
	W.Allis	-.302	-.047	+.513	3.83*
Public Affairs Use					
Newspaper: Public Affairs Use	Madison	+.159	-.098	-.154	3.[illegible]*
	W.Allis	+.350	-.001	-.056	2.0[illegible]
Television: Public Affairs Use	Madison	-.027	-.018	+.086	< 1
	W.Allis	-.148	+.085	-.003	< 1
Newspaper: Reading of Editorials	Madison	+.086	-.048	-.094	1.14
	W.Allis	+.032	-.086	+.066	< 1
Energy Communication					
Newspaper: Energy Story Reading	Madison	+.007	+.107	-.203	2.62
	W.Allis	-.015	.000	+.049	< 1
Television: Energy Program Viewing	Madison	-.036	+.035	+.011	< 1
	W.Allis	-.035	-.051	+.056	< 1
Television: Energy Commercials	Madison	+.108	+.050	-.303	5.19*
	W.Allis	+.136	-.137	+.074	1.83
Read Utility Pamphlets & Brochures	Madison	+.051	-.005	-.094	< 1
	W.Allis	-.129	-.098	+.132	2.33
Energy Discussion with others	Madison	+.023	-.008	-.032	< 1
	W.Allis	+.112	-.031	-.013	< 1
N =	Madison	(171)	(149)	(85)	
	W.Allis	(50)	(130)	(146)	

* = significant at .05 or less

TABLE 3

Proportion of Variance in Energy Salience, Energy Knowledge and Conservation Attitudes Accounted For by Blocks of Communication Variables Within Social Status Levels

Dependent Variable	Independent Variables	Variables in Block	Social Status: High	Medium	Low	Total
			Madison			
Energy Salience	Exposure Time	2	0.5	0.6	0.4	0.2
	Public Affairs Use	3	4.6*	5.9	2.5	3.2*
	Energy Communication	5	16.8*	4.6	6.2	6.7*
Energy Knowledge	Exposure Time	2	3.5*	1.8	0.7	1.0
	Public Affairs Use	3	0.5	7.6*	6.9	2.1*
	Energy Communication	5	2.0	1.9	3.8	0.3
Conservation Attitudes	Exposure Time	2	1.0	1.3	14.1*	1.5*
	Public Affairs Use	3	6.3*	11.3*	7.9	3.0*
	Energy Communication	5	2.8	6.7	2.5	1.8
	N =		(171)	(149)	(85)	(405)
			West Allis			
Energy Salience	Exposure Time	2	4.1	4.3	9.1*	4.0*
	Public Affairs Use	3	14.4	5.7	7.1	4.4*
	Energy Communication	5	22.4*	14.2*	32.9*	15.3*
Energy Knowledge	Exposure Time	2	1.5	1.1	0.2	0.0
	Public Affairs Use	3	10.2	16.0*	4.1	2.7
	Energy Communication	5	8.6	10.5	7.3	5.9*
Conservation Attitudes	Exposure Time	2	4.1	5.5	1.2	1.2
	Public Affairs Use	3	20.3*	4.1	2.5	0.6
	Energy Communication	5	34.1*	2.3	11.2*	3.2
	N =		(50)	(130)	(146)	(326)

*= significant at .05 or less. Proportions indicated are those accounting for the dependent variables beyond those of the three demographic control variables.

TABLE 4

Partial Correlation Coefficients of [illegible] ariables with Energy Salience, Energy Knowledge and Conserva[illegible]ttitudes Within Social Status Levels

Dependent Variable	Independent Variable	Madison Social Status High	Med.	Low	Total	West Allis Social Status High	Med.	Low	Total
	Media Exposure								
Energy Salience	Newspaper Time	.05	.08	.03	.04	-.12	.20	.25*	.18*
	Television Time	.05	-.01	-.05	.01	.16	-.06	.19	.10
	Public Affairs Use								
	Newspaper Public Aff.	.20*	.23*	.08	.17*	-.15	.22*	.15	.15*
	Television Public Aff.	.02	.09	-.07	.05	.28*	.08	.11	.13*
	Newspaper Editorials	.13	.13	-.09	.08	-.07	.15	.20*	.14*
	Energy Communication								
	Newspaper Energy Stor.	.34*	.14	.04	.19*	.17	.19	.36*	.28*
	Television Energy Prog.	.37*	.12	.14	.22*	.39*	.09	.47*	.31*
	Energy Commercials	.05	-.02	-.11	-.01	-.16	-.17	.08	-.05
	Utility Pamphlets	-.15*	-.17*	-.16	-.15*	-.06	.25*	.38*	.26*
	Energy Discussions	.20*	.09	-.05	.10*	.22	.26*	.28*	.22*
Energy Knowledge	**Media Exposure**								
	Newspaper Time	.19*	.04	.04	.09	-.07	.08	-.03	.00
	Television Time	.01	-.12	-.07	-.05	-.11	.07	-.03	.01
	Public Affairs Use								
	Newspaper Public Aff.	.00	-.06	.12	.02	-.27	.41*	.03	.15*
	Television Public Aff.	.06	-.10	-.20	-.03	-.23	.20	.18	.10
	Newspaper Editorials	.05	.23*	.17	.14*	-.14	.10	.09	.06
	Energy Communication								
	Newspaper Energy Stor.	-.12	.09	-.04	-.02	.09	.23*	.16	.19*
	Television Energy Prog.	-.06	-.02	.10	-.01	.08	.16	.07	.13
	Energy Commercials	.00	-.08	.12	.03	.17	.08	.16	.13
	Utility Pamphlets	.09	-.08	.13	.01	-.12	.29*	.16	.17*
	Energy Discussions	-.01	.01	.09	.02	-.18	.18	.04	.08
Conservation Attitudes	**Media Exposure**								
	Newspaper Time	.09	.05	.11	.09	.06	.18	-.10	.03
	Television Time	.05	-.10	-.26*	-.08	-.20	-.15	-.05	-.11
	Public Affairs Use								
	Newspaper Public Aff.	.09	.01	.11	.05	-.38*	.18	.04	.03
	Television Public Aff.	.16*	.07	.08	.10*	-.08	.03	.07	.03
	Newspaper Editorials	.20*	.33*	-.20	.15*	.15	-.03	.14	.07
	Energy Communication								
	Newspaper Energy Stor.	.08	.21*	.04	.10*	.41*	-.05	.16	.12
	Television Energy Prog.	.14	.14	-.06	.09	.49*	-.03	.14	.13
	Energy Commercials	-.07	.11	-.04	-.02	-.28	-.13	.27	.00
	Utility Pamphlets	-.01	-.12	-.10	-.07	.21	.00	.11	.10
	Energy Discussions	.02	.17*	.10	.09	.32	.04	.21	.15*
	N =	(171)	(149)	(85)	(405)	(50)	(130)	(146)	(326)

* = significant at .05 or less. Partial coefficients are third-order controlling for age of respondent, age of house and family size.

TABLE 5

Proportion of Variance in Thermostat Setting and Other Conservation Behaviors Accounted For by Blocks of Communication Variables Within Social Status Levels

Dependent Variable	Independent Variables	Variables in Block	Social Status: High	Medium	Low	Total
			Madison			
Lowering Thermostat	Exposure Time	2	0.2	0.6	12.1*	0.8
	Public Affairs Use	3	1.0	3.8	4.4	1.8*
	Energy Communication	5	4.1	6.1	11.9*	4.9*
Total Energy Conserving Behaviors	Exposure Time	2	0.1	0.1	3.9	0.4
	Public Affairs Use	3	2.5	1.0	5.7	2.2*
	Energy Communication	5	7.7*	8.1*	4.3	5.1*
	N =		(171)	(149)	(85)	(405)
			West Allis			
Lowering Thermostat	Exposure Time	2	8.7	0.7	0.5	0.6
	Public Affairs Use	3	6.8	1.8	4.2	1.9
	Energy Communication	5	4.0	6.8	2.2	1.8
Total Energy Conserving Behaviors	Exposure Time	2	0.6	0.3	6.5*	1.1
	Public Affairs Use	3	5.6	0.8	2.0	0.5
	Energy Communication	5	7.5	11.2*	13.4*	3.8
	N =		(50)	(130)	(146)	(326)

* = significant at .05 or less. Proportions indicated are those accounting for the dependent variables beyond those of the three demographic control variables.

TABLE 6

Partial Correlation Coefficients of Communication Variables with Thermostat Setting and Other Conservation Behaviors Within Social Status Levels

Dependent Variable	Independent Variable	Madison Social Status High	Med.	Low	Total	West Allis Social Status High	Med.	Low	Total
Lowering Thermostat	**Media Exposure**								
	Newspaper Time	-.03	.06	.33*	.07	.09	-.06	.05	-.01
	Television Time	-.05	-.05	-.12	-.06	-.33*	-.06	-.05	-.08
	Public Affairs Use								
	Newspaper Public Aff.	.07	.18*	.20*	.14*	.12	.11	.10	.10
	Television Public Aff.	-.07	.08	-.10	-.03	-.10	.07	-.04	.05
	Newspaper Editorials	.03	.12	-.01	.03	.30	-.04	.20*	.11
	Energy Communication								
	Newspaper Energy Stor.	.15	.17*	.26*	.20*	-.05	.12	.11	.11
	Television Energy Prog.	.05	.15	.12	.10	.11	.13	.11	.12
	Energy Commercials	-.13	-.07	-.09	-.08	-.14	.20*	.08	.05
	Utility Pamphlets	-.06	-.13	-.29*	-.13*	.10	-.05	-.01	.04
	Energy Discussions	.12	.18*	.01	.12*	-.05	.10	-.01	.02
Total Conserving Behaviors	**Media Exposure**								
	Newspaper Time	.03	-.02	.20*	.06	.08	.04	.20*	.10
	Television Time	-.01	-.02	.09	.01	.04	.05	-.15	-.04
	Public Affairs Use								
	Newspaper Public Aff.	.10	.04	.20*	.10*	.06	.00	.11	.02
	Television Public Aff.	.01	.02	.09	.03	-.20	.06	-.02	-.04
	Newspaper Editorials	.14	.10	.17	.13*	.17	-.05	.11	.06
	Energy Communication								
	Newspaper Energy Stor.	.12	.07	.15	.10*	.04	-.10	.15	.02
	Television Energy Prog.	.04	.11	.10	.09	.00	-.12	.13	-.08
	Energy Commercials	-.08	-.03	.09	-.02	.00	-.01	.23*	.09
	Utility Pamphlets	-.05	-.18*	-.13	-.12*	-.16	.25*	.26*	.17*
	Energy Discussions	.25*	.25*	.12	.22*	.14	-.05	.06	.01
	N =	(171)	(149)	(85)	(405)	(50)	(130)	(146)	(326)

* = significant at .05 or less. Partial coefficients are third-order controlling for age of respondent, age of house and family size.